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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,823	01/25/2006	Hiroshi Kaneta	Q92714	9638

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EXAMINER	
LI, JUN	
ART UNIT	PAPER NUMBER
1793	

NOTIFICATION DATE	DELIVERY MODE
07/27/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/565,823	KANETA, HIROSHI	
	Examiner	Art Unit	
	JUN LI	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 April 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04/16/2010 has been entered.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanjou (US2003/0215702) in view of Yomashita (US6287720), Takeuchi (US6083645), Takeuchi (JP2003-208895) and Shimamura (US2003/0113621).

Tanjou teaches a secondary cell module comprising a combination cell formed by the positive electrode terminal and/or the negative electrode terminal connected in series and/or in parallel with each other through a metal bus-bar and a casing which contains this combination cell (abstract, [0090]) to make a small-sized and light-weighted as well as thin-shaped secondary battery ([0010]). Tanjou further teaches the positive electrode (item 5a, Figure 1-4) formed by laminating positive electrode active material on both sides of positive current collector made of aluminum , negative

electrode (item 5b, figure 1-4) formed by laminating negative electrode active material on both sides of the negative current collector , electrolytic solution (item 4a) contained in flexible outer wrapper of envelop type (item 4c), separator (item 5c) laminating negative and positive electrode ([0090], claim 1, 2) wherein a laminated secondary battery is expected.

Regarding claim 1, Tanjou fails to expressly teach the output discharge capacity, separator thickness, active material size and thickness, ratio between active material width and lead terminal width.

However, Tanjou indicates that the secondary battery energy capacity, energy, power etc can be designed with probable battery cell numbers ([0036]).

Yamashita teaches a separator used in conventional battery including lithium secondary battery can have a thickness not less than 25 μm (col. 2 lines 4-20, lines 25-39, col. 8 lines 10-17). Yamashita further discloses a separator of thickness of 100nm-100 μm (col. 7 lines 52-58, abstract).

It would have been obvious for one of ordinary skill in the art at the time of invention filed to adopt such separator thickness as shown by Yamashita to modify the secondary battery of Tanjou because such thickness separators are well known in the art and such thickness of separator can provide enough mechanical strength to avoid breakage of separator as suggested by Yamashita (col. 2 lines 35-37, col. 8 lines 10-17).

Takeuchi'645 teaches a lithium secondary battery with output energy more than 350W/kg and a negative active material layer thickness of 10-200 μm made from a

negative active material with a particle size of 1-20 μm (abstract, column 5 lines 19-20, 60-61, claim 1).

Takeuchi teaches using a positive active material with primary particle sizes of 1μm and aggregate size 13 μm ([0023]) wherein an average particle size is from 1-13 μm is expected. Takeuchi also teaches the positive active material layer thickness can be 40 μm, negative active material layer can be 30 μm and a separator thickness of 25 μm ([0027]).

It would have been obvious to one of ordinary skill in the art at the time of invention filed to adopt the output energy capacity and negative active material size, layer thickness as shown by Takeuchi'645 and positive active material particle size and layer thickness as shown by Takeuchi to improve the secondary battery of Tanjou. One of ordinary skill in the art would have been motivated to do so because higher output energy capacity is always desired for intended uses such as in electric cars while manipulating active material, layer thickness can help obtain a desired discharge capacity and a better internal resistance battery as indicated by Takeuchi'645 (abstract, column 5 lines 19-20, 60-61, claim 1) and Takeuchi (abstract). It is to be note that the recited output energy capacity and particle size, layer thickness overlap with the prior art, thus a prima facie case of obviousness exists (See § MPEP 2144.05 [R-5] I).

It would have been obvious for one of ordinary skill in the art at the time of invention filed to adopt such active material particle size, active material layer thickness as shown by Takeuchi'645 and Takeuchi to modify the lithium secondary battery of Tanjou because Tanjou needs such specific active material particle size, active material

layer thickness and proper separator thickness for successfully manufacturing a lithium secondary battery but not describing one while Takeuchi'645 and Takeuchi provides such specific active material particle size, active material layer thickness and proper separator thickness in lithium secondary battery.

Furthermore, adopting known techniques for improving efficiency of similar product is well within the scope of one ordinary skill in the art.

Shimamura teaches the width ratio of the current collector and lead terminal can be 1 (abstract, Figure 1, [0053]) and the positive current collector thickness can be 20 μm and negative current collector can be 10 μm (example 1).

It is to be noted that the width of the current collector is the width of the active material region in light of the instant specification (page 17 first 5 lines and Figure 2). Tanjou also further teaches the width of the terminal to certain extent is desired for intended uses in electric automobile ([0093]).

It would have been obvious to one of ordinary skill in the art at the time of invention filed to adopt the ratio between the current collector (i.e. active material) and lead terminal as shown by Shimamura to improve the secondary battery of Tanjou. One of ordinary skill in the art would have been motivated to do so because a large width lead terminal with a ratio (relative to the active material region) larger than the recited range is well known and desired for intended use in electric automobiles in the art and adopting known technique for improving efficiency of similar product is well within the scope of one ordinary skill in the art.

It would have been obvious to one of ordinary skill in the art to adopt recited current collector thickness as shown by Shimamura to improve the secondary battery of Tanjou because combining known elements for predictable results is well within the scope of one ordinary skill in the art. It is noted that Takeuchi already teaches the positive active material layer thickness can be 40 μm and negative active material layer can be 30 μm ([0027]) and Shimamura already teaches the positive current collector thickness can be 20 μm and negative current collector can be 10 μm (example 1) wherein the thickness of the positive current collector is 20% more than the positive active material layer (i.e. thickness of the positive electrode excluding the current collector) and the thickness of the negative current collector is 10% more than the negative active material layer (i.e. thickness of the negative electrode excluding the current collector). Thus the recited thickness of the current collectors and the thickness of the electrode are well known in the art and one of ordinary skill in the art would have been obvious to combine such known elements for predictable results.

As for the recited 10-second output value, it is noted that the applied references already teaches a substantially similar battery, thus substantially similar output value as recited in the instant claims are expected.

Regarding claim 2-3 and 6, Tanjou further teaches positive terminal (item 8a figure4) and negative terminal are draw out facing each other (figure 4, [0095]). Tanjou teaches the surface area of bus-bar is more than 1.5 time bigger than the surface area of terminal ([0096], [0097]) wherein the terminal are exposed outside the case (Figure 10).

Regarding claim 4 and 7-9, Tanjou already teaches a case containing a plurality of secondary lithium ion battery cell combination (abstract, claim 1, 2, [0005], [0010]).

Regarding claim 5 and 10-12, Tanjou fails to expressly teach cooling the positive and negative electrode terminal.

Shimamura further teaches using a cooling wind sent to the terminal electrode portions (figure 3A, B, [0038], [0037]) for improving the lifetime of the battery.

It would have been obvious to one of ordinary skill in the art at the time of invention filed to adopt cooling wind sent to electrode terminals as shown by Shimamura to improve the secondary battery of Tanjou. One of ordinary skill in the art would have been motivated to do so because applying a cooling wind can help control the temperature increase of the battery thus improve the battery lifetime as indicated by Shimamura ([0037]) and adopting known technique for improving efficiency of similar product is well within the scope of one ordinary skill in the art.

2. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanjou (US2003/0215702) in view of Yomashita (US6287720), Yoshida (US6291102) and Shimamura (US2003/0113621).

Reference of Tanjou has been described as above.

Regarding claim 1, Tanjou fails to expressly teach the output discharge capacity, separator thickness, active material size and thickness, ratio between active material width and lead terminal width.

Reference of Yomashita has been described as above.

It would have been obvious for one of ordinary skill in the art at the time of invention filed to adopt such separator thickness as shown by Yamashita to modify the secondary battery of Tanjou because such thickness separators are well known in the art and such thickness of separator can provide enough mechanical strength to avoid breakage of separator as suggested by Yamashita (col. 2 lines 35-37, col. 8 lines 10-17).

Yoshida teaches a tabular laminated lithium secondary battery body having a plurality of electrode laminates which is put into a firm case (Fig 5, col. 1 lines 38-55, abstract). Yoshida further discloses such battery using active material with particle size ranges from 0.3-20 μm (col. 6 lines 48-50, clm. 1, 8-9), positive current collector (an aluminum foil) with a thickness of 20 μm wherein the positive current collector is applied a coating of positive active material with a thickness of 100 μm (col. 8 lines 1-5), negative current collector (a copper foil) with a thickness of 12 μm wherein the negative current collector is applied a coating of negative active material with a thickness of 100 μm (col. 8 lines 6-13). It is noted that the positive current collector thickness is 20% of the coated active material layer thickness and negative current collector thickness is more than 10% of the coated negative active material layer thickness. It is also noted that Yoshida disclosed an active particle sizes overlapping with the ranges of that in the instant claims thus renders a prima facie case of obviousness (See § MPEP 2144.05 [R-5] I).

It would have been obvious for one of ordinary skill in the art at the time of invention filed to adopt such active material particle size as shown by Yoshida to modify

the secondary battery of Tanjou because such size active particles will provide a probable surface area active material for the battery and also help forming a thin film with even surface to adhere to the separator as suggested by Yoshida (col. 6 lines 50-59).

It would have been obvious for one of ordinary skill in the art at the time of invention filed to adopt such current collector thickness, active material coating thickness as shown by Yoshida to modify the secondary battery of Tanjou because such current collector thickness and active material coating thickness can help making a lithium secondary battery with improved charge and discharge efficiency, increased energy density and reduced thickness as suggested by Yoshida (col. 3 lines 28-38, col. 8 lines 1-13, abstract). Furthermore, combining known elements for predictable results is well within the scope of one ordinary skill in the art.

Shimamura teaches the width ratio of the current collector and lead terminal can be 1 (abstract, Figure 1, [0053]) and the positive current collector thickness can be 20 μm and negative current collector can be 10 μm (example 1).

It is to be noted that the width of the current collector is the width of the active material region in light of the instant specification (page 17 first 5 lines and Figure 2). Tanjou also further teaches the width of the terminal to certain extent is desired for intended uses in electric automobile ([0093]).

It would have been obvious to one of ordinary skill in the art at the time of invention filed to adopt the ratio between the current collector (i.e. active material) and lead terminal as shown by Shimamura to improve the secondary battery of Tanjou. One

of ordinary skill in the art would have been motivated to do so because a large width lead terminal with a ratio (relative to the active material region) larger than the recited range is well known and desired for intended use in electric automobiles in the art and adopting known technique for improving efficiency of similar product is well within the scope of one ordinary skill in the art.

It would have been obvious to one of ordinary skill in the art to adopt recited current collector thickness as shown by Shimamura to improve the secondary battery of Tanjou because combining known elements for predictable results is well within the scope of one ordinary skill in the art.

As for the recited 10-second output value, it is noted that the applied references already teaches a substantially similar battery, thus substantially similar output value as recited in the instant claims are expected absent evidence to the contrary. Furthermore, Tanjou already indicates that the secondary battery energy capacity, energy, power etc can be designed with probable battery cell numbers ([0036]) and Yoshida already suggests a lithium secondary battery with improved charge and discharge efficiency, increased energy density and reduced thickness is always desired (col. 3 lines 28-38, col. 8 lines 1-13, abstract). It would have been obvious for one of ordinary skill in the art at the time of invention filed to obtain a lithium secondary battery with high energy output as recited in the instant claims via routine optimization.

Regarding claim 2-3 and 6, Tanjou further teaches positive terminal (item 8a figure4) and negative terminal are draw out facing each other (figure 4, [0095]). Tanjou teaches the surface area of bus-bar is more than 1.5 time bigger than the surface area

of terminal ([0096], [0097]) wherein the terminal are exposed outside the case (Figure 10).

Regarding claim 4 and 7-9, Tanjou already teaches a case containing a plurality of secondary lithium ion battery cell combination (abstract, claim 1, 2, [0005], [0010]).

Regarding claim 5 and 10-12, Tanjou fails to expressly teach cooling the positive and negative electrode terminal.

Shimamura further teaches using a cooling wind sent to the terminal electrode portions (figure 3A, B, [0038], [0037]) for improving the lifetime of the battery.

It would have been obvious to one of ordinary skill in the art at the time of invention filed to adopt cooling wind sent to electrode terminals as shown by Shimamura to improve the secondary battery of Tanjou. One of ordinary skill in the art would have been motivated to do so because applying a cooling wind can help control the temperature increase of the battery thus improve the battery lifetime as indicated by Shimamura ([0037]) and adopting known technique for improving efficiency of similar product is well within the scope of one ordinary skill in the art.

Response to Arguments

Applicant's amendments filed on 04/16/2010 have been acknowledged and previous specification objections have been withdrawn due to applicant's amendments.

Applicant's arguments filed on 04/16/2010 have been fully considered but they are not persuasive. In response to applicant's arguments about the newly amended limitation of separator thickness being from 10-30 μm, it is noted that Takeuchi'895 and

newly applied reference Yomashita teaches such limitation. As for the arguments about Takeuchi'895 and Takeuchi'495 relating to cylindrical shape battery, it is note that both Takeuchi references were applied for remedying the active particle size, active material layer thickness etc in lithium secondary battery while primary reference Tanjou already discloses a laminate type lithium secondary battery. Furthermore, both Takeuchi references and Tanjou are directed to lithium secondary battery wherein Tanjou needs a specific active material size, active material layer thickness and proper separator thickness without describing one while Takeuchi references provides such active material size, active material layer thickness and proper separator thickness for successfully manufacturing a lithium secondary battery. In addition, it is also well known in the art that secondary battery shape can be freely designed with laminated battery cell body as shown by Yoshida (col. 3 lines 27-32).

As for the alleged laminated shape battery has superior results over the cylindrical type battery, it is noted that primary reference Tanjou already teaches such laminated shape battery, thus similar improved results are expected absent evidence to the contrary. As for the applied references not expressly disclosing the recited 10 second output value, it is noted that applied references teach a substantially similar battery, thus substantially similar properties such as 10s output value are expected absent evidence to the contrary.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUN LI whose telephone number is (571)270-5858. The examiner can normally be reached on Monday-Friday, 8:00am-5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Mayes can be reached on 571-272-1234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JUN LI/
Examiner, Art Unit 1793
07/08/2010

/Melvin Curtis Mayes/
Supervisory Patent Examiner, Art Unit 1793